

Subject card

Subject name and code	3D Graphics, PG_00155260						
Field of study	Informatics						
Date of commencement of studies	October 2024		Academic year of realisation of subject			2024/2025	
Education level	Master's studies		Subject group			Obligatory subject group in the field of study Optional subject group	
Mode of study	part-time studies		Mode of delivery			at the university	
Year of study	1		Language of instruction			Polish Polish or English	
Semester of study	2		ECTS credits			7.0	
Learning profile	academic		Assessment form			exam	
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Piotr Arłukowicz				
	Teachers		dr Piotr Arłukowicz				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	0.0	20.0	0.0	0.0	40
	E-learning hours included: 0.0						
	Additional information: The course is delivered through a combination of multimedia lectures, Problem-Based Learning (PBL), case study analyses, and supervised individual exercises. These activities are designed to enable students to develop proficiency in fundamental graphic techniques and to systematically enhance their practical skills.						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	40		0.0		135.0	175
Subject objectives	The objective of the course is to familiarize students with the principles of three-dimensional graphics from a constructivist perspective. The curriculum encompasses both fundamental and advanced concepts, which are thoroughly explained. Subsequently, students engage in individual project work, applying the techniques and methodologies acquired during the course.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[INFMU2_U10] is able to determine the directions of further learning and implement the process of self-education		The student is able to create an advanced 3D graphic scene, composed of three-dimensional models enriched with custom-made materials, textures, and lighting, including visible elements of post-processing.			[SU2] presentation/project/paper/report	
	[INFMU2_K01] knows the limits of his own knowledge and understands the need for further learning		The student knows to create an advanced 3D graphic scene, composed of three-dimensional models enriched with custom-made materials, textures, and lighting, including visible elements of post-processing.			[SK2] presentation/project/paper/report	

Subject contents	Course Description The course introduces students to the principles of three-dimensional computer graphics from a constructivist perspective. Through a combination of multimedia lectures, Problem-Based Learning (PBL), case study analysis, and supervised individual exercises, students acquire both theoretical knowledge and practical skills in 3D modeling, lighting, texturing, and rendering using Blender. The course emphasizes self-directed learning and creative problem solving in a technical context. Course Objectives: • To introduce fundamental and advanced concepts of 3D computer graphics. • To develop students ability to use Blender for modeling, texturing, and rendering 3D scenes. • To foster critical thinking and self-evaluation in visual and technical aspects of digital graphics. Learning Outcomes (in line with National Qualifications Framework): Upon successful completion of the course, students will be able to: 1. Demonstrate knowledge and understanding of core and advanced concepts in 3D modeling, lighting, materials, and rendering. <i>Verification method:</i> Continuous assessment based on individual progress during classes and an oral discussion of the final project. 2. Independently design and develop a complete 3D graphical scene using techniques acquired during the course. <i>Verification method:</i> Final individual project in Blender with documentation. 3. Critically evaluate their own work and that of peers in terms of technical execution and aesthetic quality. <i>Verification method:</i> Participation in project review sessions and peer assessment. Course Content: 1. Fundamentals of using Blender software. 2. Low-poly, mid-poly, and high-poly modeling techniques. 3. Scene lighting principles and practices. 4. Materials and surface properties; types of shaders in 3D graphics. 5. Procedural textures and material property modifiers; bump mapping and normal mapping. 6. Bitmap textures and an introduction to vector spaces; UV mapping. 7. Projection painting techniques. 8. Post-processing and rendering.		
Prerequisites and co-requisites	A basic proficiency in computer use is required. More broadly, skills in graphic design and familiarity with graphic design software are beneficial and welcome. Recommended: familiarity with digital imaging or design tools.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	final project	51.0%	100.0%
Recommended reading	Basic literature	1. Jason van Gumster: Blender All-In-One for Dummies, Wiley John + Sons; Edycja 1. (30 kwietnia 2024), ISBN-13: 978-1394204045, ISBN-10: 1394204043 Any other book about Blender is OK, the best are more recent, because Blender is changing fast. Any typical newset book is about one year behind the current Blender state.	
	Supplementary literature	1. Jazemune Wualsona: The Essential Blender 4.1 2024 Guide For Beginners: Master 3D Modeling, Animation, and Rendering Techniques with Blenders Powerful Tools, Independently published (4 września 2024), ISBN-13: 979-8336929874	

	eResources addresses	Basic https://polskikursblendera.pl - Polish Blender Course (main site) https://inf.ug.edu.pl/~piotao/zajecia/sylabusy/grafika/kurs.php - Polish Blender Course (secondary site) Supplementary https://www.youtube.com/@BlenderOfficial - Blender Official
Example issues/ example questions/ tasks being completed	Examples of ad-hoc projects that students are expected to know how to create: https://inf.ug.edu.pl/~piotao/zajecia/egzamin/g3d/	
Work placement	Not applicable	

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